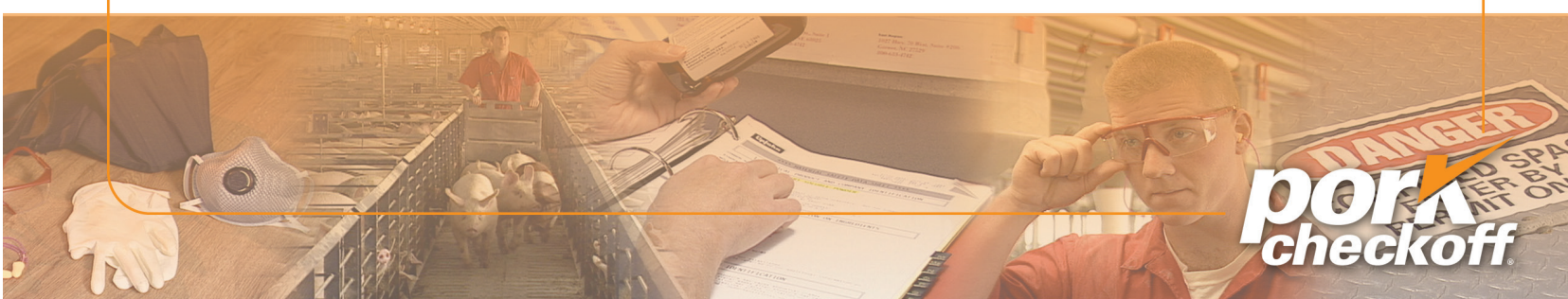
Pork Production Safety System



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Contents

Introduction 4
Emergency Action Plan 10
Good Housekeeping 14
Avoiding Repetitive Motion Injuries 17
Safe Lifting 20
Avoiding Slips, Trips and Falls 22
Electrical Safety 24
Fire Prevention and Safety 28
Extreme Temperature Safety 33
Hearing Health and Safety 38
Respiratory Health and Safety 45
Personal Protective Equipment 53
Hand and Power Tool Safety 55
Hazard Communication Program 58
Confined Space Program 62
Lockout/Tagout Program 65
Pig Behavior and Characteristics 67
Safe Animal Handling - General 71
Safe Animal Handling - Breeding 75
Safe Animal Handling - Farrowing and Weaning 77
Safe Animal Handling - Nursery and Finishing 81
Women's Health Issues 83
Power Washing and Tractor Safety 87

Introduction to Safety and Our Safety Program

Agriculture is one of the most hazardous occupations in the United States, and leads all other industries in work-related fatalities. A majority of all agricultural accidents involve some type of machinery or equipment. On pork operations, however, most occur during animal/human interaction.

People don't often think about what they might lose if they are injured, or how an injury might affect their life and the lives of those around them. If you're injured on the job, you can lose time and income while recovering. Medical and rehabilitation bills can pile up. You can lose the ability to function – temporarily or permanently – as you did before the accident. And no matter what your role is to your operation, injuries to workers put tremendous physical and financial strains on the business. Worst of all, accidents can cost people their lives.

Your operation's safety program is in place to provide an environment that encourages safety awareness and compliance in all employees. It is designed to help minimize accidents, both human and material, by taking a proactive approach to safety. A proactive approach requires the identification of unsafe or hazardous conditions in every area of the operation, today and in the future. It also strives to:

- provide a uniform safety management policy consistent with the requirements of OSHA and the operation's insurance carriers;
- define specific responsibilities for effective enforcement of all safety policies, procedures and programs;
- provide a means for ongoing development and updating of safety education and training; and
- provide a means for the participation of all employees in an ongoing safety program.

Vocabulary

A *hazard* is a source of danger.

Near miss accidents are situations in which an accident didn't occur, but almost did, and are to be avoided in the future.

Personal protective equipment or PPE refers to equipment used to help protect you against hazards. Some examples are safety glasses or goggles, earmuffs or earplugs, back supports, knee pads and dust masks or respirators.

Everyone's responsibility

For a safety program to work it has to be *everyone's* responsibility. Owners, managers and every single employee need to be on board. By not taking responsibility, the employee puts himself and others at risk.

The safety responsibilities of EMPLOYERS and OWNERS include:

- providing a healthy and safe workplace;
- knowing and following health and safety practices;
- providing and maintaining safe buildings, machinery, tools and equipment;
- establishing and implementing an effective health and safety program;
- providing appropriate supervision and ensuring clear lines of authority;
- making sure supervisors are trained, supported and held accountable for meeting their health and safety obligations;
- informing employees of existing hazards and training them to recognize other hazards;
- making sure employees have the information, training, experience and supervision needed to do their job safely;
- providing employees with appropriate personal protective equipment (PPE) and training them on how to use and maintain it properly;
- making sure adequate first aid supplies are provided, and that employees know where to find them;
- ensuring that traffic routes, entrances and exits to buildings, confined spaces and other work areas are safe; and
- safely handling, transporting and storing hazardous products such as chemicals and fuel.

The safety responsibilities of SUPERVISORS include:

- making sure hazards are identified and proper steps are taken to control risks;
- understanding workplace health and safety practices and ensuring that they are met;
- inspecting work areas and correcting unsafe conditions or unsafe behaviors before they lead to an accident;
- understanding and implementing emergency procedures; and
- making sure workers are properly trained and that they follow safe work procedures.

The safety responsibilities of all EMPLOYEES include:

- understanding and complying with workplace health and safety practices;
- following safe work procedures;
- using safety equipment, machine guards, safety devices and personal protective equipment;
- reporting unsafe acts and workplace hazards, accidents, near-accidents, injuries and illnesses immediately;
- working and acting safely while helping others to work and act safely; and
- cooperating with employers, owners, supervisors and co-workers on health and safety issues.

Maintaining a safe work environment

In a safe environment, safety is everyone's concern - including family, co-workers, visitors and you. You can protect yourself by simply being aware of your actions and your surroundings. Most injuries occur during routine chores when people get focused on the task and lose sight of the hazards around them. Ask for help if a task might be more than you can handle alone.

Staying healthy is important to ensure you are able to safely and effectively perform your job. Maintain your health by following these steps:

- take short rest breaks while working, and drink water throughout the day to prevent fatigue or dehydration (coffee and soft drinks do a poor job of re-hydrating the body);

- eat a well-balanced diet and get plenty of sleep; and
- wear the proper personal protective equipment (PPE) for routine chores and for specific jobs (protective footwear and close fitting clothing are important for everyday work; specific job-related PPE will be discussed in future lessons).

Working with power tools can be very dangerous and lead to serious injury if they're not used correctly. Before using any type of equipment, it is important to read the operator's manual to make sure you are using it correctly and to prevent injury. If there is equipment you have not been trained to use, do not use it until you have been properly trained.

It is never a good idea to use power tools when you are upset or angry. Simply take some time to cool down and regain your composure before using power tools.

To prevent hand injuries, always be aware of where you place your hands as you are working. Be extremely careful and watchful of your hand position when opening and closing gates, working with devices to open and close building curtains, operating any type of machinery with winches (such as an adjustable ramp), working with augers and working with hogs.

Your hands are very susceptible to injury when opening or closing gates or using a sorting board. For example, unexpected hog movements can cause a gate or sorting board to jam against a stationary object, injuring fingers and hands.

Be especially careful of your hands when moving from room to room in the facility. When you open a door, you are creating a negative pressure that can cause the door to slam shut. By staying alert and always being aware of your hand position you can prevent an injury from occurring.

Reporting procedures

When accidents do happen in the hog facility it is important to understand how to accurately report them. It is everyone's responsibility to

keep a watchful eye on the workplace to notice things that could be potential hazards.

The Safety Assessment Checklist is our guide to maintaining a safe workplace. If there is ever a time when you notice something does not meet the standards set in the checklist, fill out a Hazard Reporting Form and turn it in to your supervisor. This will bring the hazard to the attention of the supervisor and appropriate measures can be taken to fix it.

When a work-related injury, illness or near-miss accident occurs, it must be reported to your supervisor. After one of these events occurs, completely fill out and an Injury/Incident Investigation Report and turn it in to your supervisor or the person designated by your employer. You need to report an accident if you were involved in the incident or were a witness to it.

Key points

- Agriculture is the leading industry for work-related fatalities.
- Safety is too expensive to learn by accident. Accidents have many related costs.
- Safety is everyone's responsibility.
- The working environment can be made safer by following simple safety procedures.
- Identify and report hazards.
- Report work-related injuries, illnesses and near-miss accidents.

Safety program objectives:

- provide an environment that encourages safety awareness and compliance in all employees.
- minimize accidents, both human and material, by taking a proactive approach to safety, identifying present and future unsafe or hazardous conditions in every area in the operation.
- provide a uniform policy of safety management consistent with the requirements of OSHA and insurance carriers.
- define specific responsibilities for effective enforcement of all safety policies, procedures and programs.

- provide a means for ongoing development and updating of safety education and training.
- provide a means for the participation of all employees in an ongoing safety program.

Emergency Action Plan

Response time to an accident can be decreased and further injury prevented by developing an Emergency Action Plan and making sure everyone working at the pork production facility is informed of its procedures. An Emergency Action Plan covers who to notify in case of emergency, what you need to say to them and what actions to take. You should know who in your facility is certified in cardiopulmonary resuscitation (CPR) and who are the first aid cardholders so you can find them quickly to help an injured person. You should also learn who to should contact with questions about the emergency plan so they may be answered before an emergency situation arises.

Vocabulary

The *Emergency Action Plan* is a prepared document detailing how to notify, rescue and evacuate in case of fire, noxious gas leak, natural disaster, chemical spill or other such emergency.

The term *evacuation route* refers to a drawing or text that clearly describes how a person should exit a building in case of an emergency.

MSDS or *Material Safety Data Sheets* are components of the Right to Know Law. Chemical manufacturers are required to provide this sheet with every chemical sold. The MSDS includes information about the chemical, its potential hazards and how to safely work with it.

Emergency Action Plan

Because accidents are inevitable, it's critical that hog production facility employees familiarize themselves with the key emergency situation practices at the facility. The Emergency Action Plan will tell you who to call, what to say and what steps to follow in an emergency. If someone is injured in the accident, go to the sheet in your facility listing the names of on-site first aid cardholders. Contact this person and make sure the injured individual is cared for, until emergency medical services can arrive.

Make sure you have consulted your Safety Program Contacts, the people in your operation who can answer any questions you may have about the operation's Safety Program. Familiarize yourself with the Evacuation Plans, which indicate how to exit each building as well as where to meet once you have exited so the person in charge of conducting a head-count can verify who has safely evacuated the building.

Five-step emergency procedure

When an accident occurs follow this five-step emergency procedure to help the injured person as soon as possible.

First, **notify a first aid cardholder** so basic care may be administered to the individual.

Second, **contact emergency services** either by radio or phone.

Third, **provide directions** to emergency personnel and notify neighbors that emergency help is on the way so they may help direct them where they need to go.

Fourth, **stabilize the accident scene** if the hazard still exists without putting yourself in danger. By doing this you can prevent further danger to the injured person or others.

Fifth, after the emergency personnel have left, **notify your supervisor** that an accident has occurred and an investigation must be performed.

Hazardous gases

Hazardous gases are a risk to you and the animals. These gases are very dangerous and you should take special care to follow all steps in the Emergency Action Plan when dealing with these gases. One way to determine if there are hazardous gases in a room is to look for downed animals or people. If people or animals are down it is possible that the area contains hazardous gases and you must not enter the room. If you notice people are down contact emergency medical services as outlined in the Emergency Action Plan instead of entering the room.

After surveying the room and determining that only animals are down, contact your supervisor who will then take the correct course of action. You may be able to dilute some of the toxic gases without entering the room by bringing fresh air in through a fan or an open curtain, window or door.

Enter the building **only** if you have been trained and approved to use a supplied-air respirator, are wearing a harness with an attached line and have someone in position on the outside to pull you out in case of an emergency. Respirators, such as an air-line respirator or a self-contained breathing apparatus (SCBA), will let you safely breathe in an unsafe environment.

Fire

A unique set of responses – which can be remembered by using the acronym **RACE** – is required when there is a fire in the facility.

RESCUE those in immediate danger.
ANNOUNCE to others the need to evacuate
CONTAIN the fire by closing doors and windows as you exit
EVACUATE immediately

Go straight to the designated meeting spot upon evacuating the building so that your head-count leader will know that you have safely made it out of the building. If the fire occurs outside of the building – such as a scrub or grass fire – be sure to notify all neighbors of the potential dangers so they may take action.

Key points

- Learn who to call, what to say, what to do in the event of an emergency.
- Know how to contact employees trained in CPR and first aid cardholders on the operation.
- Know who to contact with questions about the operation's safety program.

Do:

- Read and know your facility's Emergency Action Plan and Information.
- Know the Safety Program contacts.
- Know and follow the five-step emergency procedure.
- Use the RACE response plan in dealing with fires.

Don't:

- Fail to report or notify others of emergency situations.
- Enter a building known or suspected to have hazardous gasses without following safety procedures and wearing proper respiration equipment.
- Fail to notify neighbors and others of a scrub or grass fire.

Good Housekeeping

This section of the training manual will explain how to complete good housekeeping procedures to create a healthier and safer work environment.

Vocabulary

Housekeeping is the routine care and cleaning that needs to be acted on daily for a farm to function safely and properly.

Routine care and cleaning

Housekeeping practices in the pork facility are very similar to the housekeeping practices you would conduct in your own home.

Safety should always be a top priority in the hog facility. By practicing good housekeeping, you can create a much safer environment for everyone working there. By keeping the facility clean, you may also improve efficiency because it is easier to get work done in a clutter-free environment.

Slippery floors

Slippery floors can cause accidents, but with proper action these conditions can be prevented. If you come across a spill, clean it up immediately. Doing so will prevent others from possibly injuring themselves. When you know there is a place where drips will occur, such as below machinery or equipment, place drip pans or guards to collect the fluids.

Debris and dust also make floors slick so keep floors clean to prevent accidents. Greater precaution needs to be taken in unloading areas and alleys as they tend to be continually slippery. Also known as "slippery zones," these areas tend to collect greater amounts of water, urine or manure. By spreading barn lime you can increase traction in the area as well as take advantage of its use as a disinfectant.

Trips and falls

Serious injury due to trips or falls can result if items used in day-to-day operations are not properly put away, covered or stored. To prevent trips and falls, follow thee routine precautions:

- put tools and equipment back in their assigned places after use to not only ensure others will be able to find them, but to make sure they are not tripped over;
- guard floor openings by keeping trap doors, cages or railings closed or covered so someone walking by them does not accidentally fall and get hurt;
- keep all aisles clear of any items that could potentially cause someone to trip over them; and
- never run through the barn or jump over gates.

Storage

Serious injury can result from not following proper storage procedures. To avoid injuries resulting from improper storage, follow these routine precautions:

- place garbage cans where the waste is being produced so you can easily dispose of trash and keep the facility clean. Empty garbage cans daily so nothing overflows onto the floor, making for a messy work environment and a hazard;
- store and secure materials in their proper location;
- allow at least three feet of clearance beneath sprinkler heads when storing materials;
- stack cartons and drums on a firm, level surface so they do not fall over and injure someone standing or walking nearby;
- do not store items so that they block other items used everyday, creating extra work and extra hazards;
- do not store materials where they will block emergency passages (such as aisles, stairs, exits) or emergency equipment (such as fire equipment or first aid stations); and
- do not store cylinders of compressed gas near heat sources that may cause an explosion and fire.

Key points

- Watch out for slippery floors.
- Eliminate trip and fall hazard.
- Avoid waste accumulation.
- Eliminate unsafe storage.

Do:

- Keep floors clean and clear of waste.
- Report areas with inadequate lighting to your supervisor.
- Put away tools and equipment that aren't being used.
- Clean up spills immediately.

Don't:

- Use aisles and stairways as storage areas.
- Allow materials to build up on floors.
- Block emergency exits, fire equipment or first aid stations with stored materials.
- Store compressed gases near heat sources.

Avoiding Repetitive Motion Injuries

Repetitive motion injuries are common in the pork production industry. In this lesson you will learn what repetitive motion injuries are, which tasks in the pork industry require repetitive motion, what the symptoms of repetitive motion injuries are and how to decrease the likelihood that you will suffer from a repetitive motion injury.

Vocabulary

Carpal tunnel syndrome is a repetitive motion injury that occurs when a nerve that runs from the forearm to the hand becomes pressed or squeezed at the wrist.

Repetitive motion injury is an injury that results from repeating the same physical motion over and over for an extended period of time.

Causes

Repetitive motion injuries are most commonly caused by work done during the processing stage of pork production. These tasks include clipping teeth, giving shots or cutting tails. A repetitive motion injury exposure is determined by the way you use your body when completing these tasks.

The first step in preventing repetitive motion injuries is for you to become aware of the movements commonly causing such injuries, including:

- twisting your body when carrying animals or other heavy objects;
- continuously bending or twisting your wrists;
- working from an awkward position;
- reaching above shoulder level again and again;
- using your hands to push, pound or in some manner exert strong force; and
- gripping tools that dig into your palm.

Symptoms

After performing these movements over time you may begin feeling the symptoms associated with repetitive motion injuries. You may be awakened due to pain; sense numbness; experience tingling sensations, swelling or tenderness; have continuous aches; lose strength; experience crackling or snapping sounds in joints; or experience decreased coordination. If you experience any of these symptoms, visit a primary care provider for a thorough evaluation. The key to easing pain associated with repetitive motion injuries is through early detection and treatment.

Avoid injury

Repetitive motion injury does not necessarily have to affect you or your ability to work. You can take precautions to decrease your chances of suffering repetitive motion injuries.

Be sure to work in a **comfortable position** where all tasks can be performed using motions that feel natural to you.

When performing the same task for a period of time, **take stretch breaks** and be sure to gently stretch each part of the body you have been using.

Do not try to perform the same task all day or for a long period of time. Instead **try to rotate your tasks** so you can use different parts of the body for shorter periods of time.

After you have taken a break, **change your position** to use another type of motion or another body part.

Finally, as you perform your daily work **maintain good posture**.

Key points

- Work in a comfortable position.
- Take short "stretch" breaks when performing repetitive motion tasks.
- Change your position following a break.
- Know how to recognize the symptoms of repetitive motion injuries.

Do:

- Work in a comfortable position.
- Take short "stretch" breaks when repeatedly performing the same task. Gently stretch the parts of the body you have been using.
- Change your position following a break.
- If possible, rotate the tasks you perform during the day.
- Always maintain good posture

Don't:

- Continuously bend or twist your wrists.
- Work from an awkward position.
- Reach above shoulder level again and again.
- Use your hands to push, pound or in some manner exert strong force.
- Grip tools that dig into your palm.
- Ignore the symptoms of repetitive motion injuries.

Safe Lifting

In a hog facility, you are required to lift animals and other objects on a daily basis. You risk injury if you do not follow correct lifting procedures. This lesson will help you prevent many injuries associated with lifting by emphasizing the importance of correct lifting and teaching you the correct technique for lifting animals and objects.

Vocabulary

A *hog cart* is a mechanical device used for the safe removal of dead animals from barns.

Lifting technique

Back injuries can be very painful and can cause lifelong problems. Back and other lifting-related injuries can result from activities such as lifting heavy bags of feed, carrying dead animals, moving feeders and gates for cleaning or moving power washers from building to building.

You can help prevent back-related injuries by using the correct lifting technique. When lifting something, lift with your legs, not your back and try to keep your back as straight as possible to prevent injury. Tucking your chin in as you lift will help keep your back straight. Bend your knees, not your waist to pick up a heavy object. Finally, avoid lifting objects above chest high.

Lifting pigs can be a very difficult task as they can sometimes weigh just as much, if not more, than you. When lifting pigs there are specific guidelines you should follow. For pigs weighing less than 40 pounds do the following:

1. position yourself alongside and to the rear of the pig to be lifted;
2. secure your grip on the hind leg furthest from you with your lifting hand and use your other hand to hold the other hind leg;
3. as you lift, use the front legs of the pig to help support some of the weight until the pig is in a vertical position; and
4. lift the pig straight up to clear any gates. Lift with your legs and arms and <u>not</u> with your back.

Lifting pigs or object heavier than 40 pounds cannot always be done alone and may require help. When trying to move dead animals or other heavy loads use mechanical devices such as a hog cart to move them without injuring yourself. Always ask for help from a co-worker to move an object that is too heavy for you to lift by yourself. Asking for help is a necessary precaution to take in order to stay safe.

Key points

- Keep your back straight by tucking in your chin.
- Lift with the strong leg muscles, not the weaker back muscles.
- Ask for help lifting heavy, awkward items.
- When possible, use mechanical equipment to move heavy items.

Do:

- Tuck in your chin to keep the back as straight as possible while lifting.
- Lift with the strong leg muscles.
- Ask for help with heavy, awkward items.
- When possible, use mechanical equipment to move heavy items.

Don't:

- Use your back muscles to do the lifting.
- Try to lift an item that is too heavy or awkward.
- Twist your body while carrying an object.
- Attempt team lifting without proper coordination. One individual needs to be responsible for control of the action. If one worker lifts too soon, shifts the load, or lowers it improperly, either that person or the person working with the person may be injured.

Avoiding Slips,Trips and Falls

Slips, trips and falls present many dangers to those working in the hog facility. It is important to understand why preventing these situations is important and what actions to take to prevent slips, trips and falls.

Vocabulary

A s*lippery zone* is an area that can result in unstable footing due to the collection of water, urine, manure or other substances.

Prevention

Trying to prevent falls is not a matter you should take lightly as falls are the leading cause of injury in agriculture. Not only can falls cause serious injury, but they can also lead to death. The best way for you to prevent this kind of injury is by staying alert. If you are in a distracted state, such as being in a hurry, tired, angry or upset, sick or have alcohol or drugs in your system, you must not perform jobs that may lead to a slip, trip or fall.

Slipping on something in the facility is one common way in which you may fall. To prevent these slips from occurring you should take one or more of the following precautionary measures:

- clean up all spills as soon as they occur or as soon as you notice them;
- prevent spills from happening by using drip pans and guards on machines and equipment where spills could occur;
- keep floors free of debris and dust which may make the floors slippery;
- in areas considered "slippery zones" – areas prone to being slippery due collection of water, urine, manure or other substances – spread barn lime in order to increase traction;
- always walk, not run, through the barn; and
- wear boots with non-slip soles and heels to increase traction.

Another common way in which falls can occur is by tripping over something in the facility. In order to prevent a trip you should:

- store tools and equipment that aren't being used;
- keep aisles and stairways clear of items that cause trips or falls;
- use a flashlight as you enter a dark area and make sure the things you are carrying or pushing don't prevent you from seeing anything you might trip over; and
- walk and don't run through the barn.

Key points

- Preventing falls due to slips.
- Preventing falls due to trips.

Do:

- Keep aisles, walkways, and stairs free of clutter.
- Clean up spills immediately.
- Wear slip-resistant footwear.
- Think about actions before you take them.

Don't:

- Use aisles and stairways as storage areas.
- Allow materials to build up on floors.
- Leave oil slicks uncovered.
- Leave tools out when you finish using them.

Electrical Safety

Electricity is a strong, invisible force that gives power to machinery, lights and many other forms of equipment. However, electricity can be very dangerous. Accidental contact with electrical currents can cause injury, fire, extensive damage and even death. It's very important to remember that working with and around electricity requires your full attention and respect.

Note: *Do not perform any electrical work, including installations and maintenance, unless you are a qualified electrician.*

Vocabulary

Lockout is the act of disabling the use of a downed piece of equipment by securing it with chains or padlocks.

Tagout is the process of placing a warning tag such as "Do Not Operate" on a power source and a downed piece of equipment during a lockout.

Electrical

All electrical work in a hog facility should only be done by someone trained and authorized to do electrical work. Even then, electrical accidents can be prevented by taking the appropriate precautions including:

- paying attention to electrical outlets and plugs when working near them (especially when working with water or other liquids);
- making sure electrical power cords are not cracked, kinked or have loose connections;
- prohibiting employees from working around the facility without shoes, with shoes that have holes in the bottoms or with wet shoes;
- wearing insulated footwear when working with electrical tools or appliances;
- eliminating electrical outlet overloading;
- keeping all electrical chords away from heat sources; and
- being alert for overhead power lines while working with equipment such as ladders, portable augers, poles, etc.

Faulty equipment

Immediately inform your supervisor of any faulty equipment so it can get repaired or replaced. Don't attempt to repair the tool yourself unless authorized to do so first by your supervisor. Lockout the equipment or, at the very least, tag it out so others are aware that the equipment is damaged.

Protective clothing and footwear

Wear rubber gloves and rubber-soled shoes or boots, especially if you are working around electricity in a damp environment.

Inspect electrical tools regularly

Inspect your electrical tools on a regular basis and test equipment each time you use it. Then check the insulation around power cords to make sure they are in good condition. You should not see any exposed wires or frayed ends. Power cords in poor condition should be replaced, never taped or spliced.

Check the plug at the end of the cord to make sure the prongs are secure in the plug and none are missing. If one of the prongs is missing, do not use the tool. If you notice one of the prongs on the plug is slightly larger than the other, do not attempt to trim the tong down to match the smaller one: this is a safety feature and it should be used in outlets that only allow the plug to be inserted one way.

Don't use extension cords that have been kinked, tied in a knot, crushed, cut, or bent; they may cause a short circuit, fire or even electrical shock. Do not use extension cords in areas that receive a lot of traffic because they can be a tripping hazard and constant traffic will wear out the insulating rubber cover.

If any tool gives you a slight shock or smokes and sparks when the power is turned on, don't use it! Notify your supervisor immediately.

When you unplug cords from the outlet, remember to pull on the plug and not the cord.

Proper grounding

If an electrical tool doesn't state that it is double insulated, then it must have a third prong on the plug. This third prong, or ground prong, plugs your tool into ground or earth so that in the event of a malfunction, the electricity will go through this ground prong to earth and bypass your body. If the prong is broken or cut off, you have no protection and all the electricity will go through your body.

A ground faultcircuit interrupter (GFCI) will help prevent electrocution if there is a chance you could make contact with moisture on the ground or floor while working with electrical equipment.

Overhead power lines

Each year, construction and farm workers are injured or killed by equipment accidentally making contact with overhead high-voltage power lines. To prevent this from happening to you, preplan your job. Go out to the area you plan to move large equipment into, look around for overhead wires and electric poles, and then plan your job around them. Remember, high-voltage power lines are not insulated. Also, some jurisdictions prohibit any work within six feet of lines that carry between 600 and 50,000 volts, and require a minimum distance of 10 feet from these lines when operating boom-type lifting equipment.

If it's difficult for the operator to maintain the desired clearance without help, designate an employee to observe the distance between the crane/equipment and the line, so they can give a timely warning to the operator. This should be the ONLY job the monitor is performing.

Electrical fires

In the event of an electrical fire, stop the flow of electricity by pulling the plug out or switching off the power at the breaker box. This may stop the fire immediately.

Never throw water on an electrical fire. Water is an excellent conductor of electricity, and therefore puts you at risk of electrical shock. Instead, use a Class C fire extinguisher, designed for use on electrical fires. Make sure you know how to operate a Class C fire

extinguisher and where the nearest one is in case of emergency. If you have questions or have difficulty locating an extinguisher, ask your supervisor for help.

Good housekeeping

Make sure you can get to the main power source as quickly as possible without climbing over obstructions in the event of an emergency. Keep the aisles and walkways clean and clear of garbage. Make sure all flammable gases or chemicals are stored away from the area where any electric tool will be operated. Many electric tools produce sparks which could ignite the flammable material and cause extensive damage.

All employees should know where the electrical supply or breaker box is and how to turn off the power in case of an emergency.

Key points

- Know how to inspect electrical equipment before each use and how to identify hazardous situations.
- Understand how to shut off power and use the correct type of fire extinguisher in case of an electrical fire.

Do:

- Inspect electrical tools regularly; report faulty equipment to your supervisor.
- Wear protective clothing and footwear when working with electricity.
- Avoid overhead power lines.
- Practice good housekeeping.

Don't:

- Use faulty equipment.
- Attempt to repair a tool yourself, unless authorized to do so.
- Use extension cords in high-traffic areas.
- Throw water on an electrical fire.

Fire Prevention and Safety

In the U.S., thousands of people die from fires each year – many of them on farms. Most agricultural fires are caused by candles, matches, sparks, static electricity, friction, welding and faulty equipment. Other causes include natural occurrences such as lightning and spontaneous combustion. Taking a few precautions could have prevented many of these deaths. The fact that fires are so preventable is good news for you. Follow these fire prevention and safety guidelines so you can keep yourself and your fellow employees safe from fires.

Vocabulary

An *Emergency Action Plan* is a written procedure detailing how to announce, rescue and evacuate in case of fire, noxious gas leak, natural disaster, chemical spill or other such emergency.

The term *flammable* means something is capable of igniting and burning rapidly.

Housekeeping is the routine care, maintenance and cleaning for a farm to function safely and properly.

Methane is a colorless, odorless, flammable gas that is primarily an explosion hazard.

The *National Fire Protection Agency* or *NFPA* provides information about fire safety.

Housekeeping

Practicing good housekeeping helps prevent fires, including the following measures:

- removing weeds and brush from an area of at least 20 feet from all sides of the building;
- keeping work areas clean and clutter free;
- making sure all stairs, aisles and exits are free of obstructions; and
- properly storing equipment when it is not in use.

Report any observed fire hazards to your supervisor immediately. Electrical motors and appliances are a significant source of fire hazards and should be checked frequently for exposed wiring, broken insulation, improper grounding, improper installation, missing thermal overload relays or cutouts.

To prevent fires and accidents from occurring, be sure to respect and comply with all flammable warnings. If you smoke, do not do so in designated "no smoking" areas or in any other area in which flammable and combustible materials are stored. Make sure flammable substances are kept in fireproof containers, are properly labeled and are stored in safety cabinets approved for flammable materials.

Welding and cutting

Special safety measures must be taken to prevent fire when welding or using a torch to cut materials. Do not weld or use a cutting torch if you have not received the appropriate training to do so. If you have been trained, remember to inspect welding and cutting equipment daily.

Check to make sure the non-current carrying metal parts of electrical welding equipment and other circuits are grounded. Do not use fuel gas-oxygen welding and cutting equipment unless it has a reverse flow check valve between the torch and the regulator. Store compressed gas cylinders in a secure, upright position.

Before starting to weld, check to ensure that you and any other workers in the area are shielded from welding flash, sparks and slag. Protect combustible materials in the surrounding area from heat, molten metal and other ignition sources.

Fire emergency preparation

It's important to understand what to do in the case of an emergency, *before* one occurs in the facility. There are several information sheets specific to your facility to tell you who to contact or what to do if a fire emergency occurs.

If you ever have a question about safety in the facility look to the Safety Program Contacts. This list identifies who will be able to answer your questions on the company's safety programs. The Farm Emergency Information sheet tells you who to call, what to say and what steps to follow in case of a fire. The First Aid Cardholders Sheet is a list of everyone in the facility who has received first aid training, along with their name and contact number.

Be sure to understand the Evacuation Plan for each building. The plan outlines how to identify the evacuation symbol and route for the building as well as where you should report upon evacuation. It will also inform you of whom the nose-count leader will be at the evacuation site.

Above all, do not put yourself at risk by staying in the building searching for these lists. Be sure you are familiar with this information *before* an emergency happens so you will know how to react immediately.

Fire fighting

Even after taking all precautions to prevent a fire in the facility, fires may still occur. If you are the first to notice the fire, take the steps outlined in the acronym **RACE.**

- Rescue. First, rescue or remove those in immediate danger.
- Alert. Alert all employees of the need to evacuate by sounding your facility's evacuation signal. You will learn what your facility's evacuation symbol is from your safety program instructor during your classroom training.
- Confine. Confine fire and smoke by closing all windows and doors in the area.
- Extinguish/Evacuate. Use a portable fire extinguisher to put out a small fire. If the fire is too large, use the extinguisher while helping evacuate the building. Once outside the building, go immediately to the designated meeting place: do not go back in! You will be informed of your meeting place from your safety program instructor during classroom training.

If you are dealing with a scrub or grass fire, be sure to notify neighbors or others who may be in danger.

The other acronym to remember when dealing with fire is **PASS**. These letters are used to help you remember the correct way to operate a fire extinguisher.

- Pull the pin. To do this, hold the extinguisher with the nozzle pointing away from you, and release the locking mechanism.
- Aim low. When using the extinguisher, point the nozzle at the base of the fire.
- Squeeze the lever slowly and evenly.
- Sweep the nozzle from side-to-side at the base of the fire.

When using the extinguisher, be sure to keep your back to a clear exit so you can easily escape if the situation worsens or if the room fills with smoke.

It is important to note that a fire extinguisher is not a fire department and cannot do the same job as the fire department. If a fire has burned for more than a couple of minutes or is larger than you can control with an extinguisher, sound the evacuation alarm, leave the building and call 911 or your local fire department to summon help.

Key points

- Keep the worksite clean and orderly.
- Minimize fire hazards.
- Know what to do if a fire breaks out.
- Know how to use fire extinguishers.

Do:

- Keep your work area clean and uncluttered.
- Make sure all stairs, aisles, and exits are free from obstructions.
- Report potential fire hazards to your supervisor.
- Comply with all "flammable" warnings.
- Keep flammable liquids in labeled fireproof containers.

Don't:

- Store fuel in food or drink containers.
- Re-fuel engines inside buildings or when hot or running.
- Store compressed gases near a heat source.

Extreme Temperature Safety

Although many times we see extreme hot and cold weather conditions as mere inconveniences, they can present dangerous conditions to those working in them for long periods of time.

This lesson will cover how to prevent cold and heat related sickness or injuries, how to recognize symptoms of cold and heat-related sickness and injury, and how to react if you or a co-worker is showing the beginning signs of heat- or cold-related sickness or injury.

Most environments in a hog facility are climate controlled so you can become more susceptible to stress and illness moving between buildings in extreme temperatures. This can lead to serious health conditions and could be fatal. You can prevent serious illness by learning how to recognize the symptoms of exposure to extreme hot and cold.

Vocabulary

A *cold-related injury is* an injury or illness that results from working in the cold. Two common examples are frostbite and hypothermia.

Heat-related illnesses result from working in the heat. Some heat illnesses, such as heat exhaustion and heat stroke, are very serious and can lead to death.

Hypothermia is a life-threatening medical emergency that occurs when the body loses heat faster than it can produce it.

Staying safe in the cold

There are two illnesses associated with extreme cold. The first is *frostbite*. Frostbite is damage to body tissue caused by the extreme cold. There are many symptoms associated with frostbite you need to be aware of to recognize the illness either in yourself or a co-worker. Frostbite symptoms include numbness in the affected area, a waxy appearance to the skin, the affected skin is cold to the touch and the skin in the area becomes flushed/red, white, yellow or blue.

The other cold-related illness is *hypothermia*, a condition caused when the body temperature drops to bellow 95 degrees Fahrenheit. Hypothermia is a very serious illness and can kill. Someone who has experienced hypothermia may suffer from permanent kidney, liver and pancreas damage. If you or others notice numbness in the arms and legs, muscle tension, feeling cold and fatigued and uncontrollable shivering, take immediate action and seek medical attention as these are all symptoms of hypothermia.

When you cannot avoid working in cold temperatures, there are a number of precautionary measures that you can take to keep yourself safe. First, dress appropriately, with layers of clothing. Cover as much skin as possible, especially the neck and head where heat loss is the greatest. Try to wear loose fitting clothing as it traps more insulating air pockets between layers. Add or take off layers as the outside temperature and your workload vary. Block the wind and stay dry by wearing clothing with a Gore-Tex® or nylon layer.

Get out of any wet clothes immediately, unless you are wearing wool which maintains some insulating value when wet. Avoid overdressing to the point of sweating. The moisture from perspiration will quickly conduct heat away from your body.

Keep your feet warm and dry by wearing waterproof, insulated boots. They will help you avoid hypothermia or frostbite by keeping your feet warm and dry. Boots also help you maintain footing in ice and snow.

Another key step to keeping safe in the extreme cold is carefully choosing what you drink. Although this may not seem that important, choosing the wrong drinks can harm you. Make sure to avoid alcohol, which not only impairs your judgment, but interferes with your body's ability to retain heat in cold weather. Avoid drinks containing caffeine. They will increase the amount of fluid you lose which, in turn, increases the amount of heat loss. Choose warm drinks to keep your body temperature up when working in cold conditions.

To protect yourself from frostbite you must protect yourself from direct exposure to the wind. Wind accelerates cooling of exposed skin. Be alert for frostbite symptoms. When working in the cold, take frequent breaks in a heated or warmer area. Check co-workers and have them check you for spots of white skin. White skin is an indication of poor blood circulation and cooling of the skin which can lead to frostbite in extremities like the ears and nose tips. If you notice you or someone else is suffering from frostbite, do NOT try to re-warm the area. Instead seek trained emergency medical help to care for the frostbite.

Staying safe in the heat

Working in a hot environment presents an entirely different type of stress on the body and its cooling system than does cold weather. However, warm weather is no less dangerous than cold and can also lead to serious illness or death.

There are three common illnesses caused by working in extreme heat. The first is *heat cramps*. Heat cramps are painful cramps in the arms, legs or abdomen.

Heat exhaustion is also caused by the heat and occurs when the body's cooling system fails. Symptoms associated with heat exhaustion include rapid, increased pulse and breathing; clammy skin; heavy sweating; and total body weakness/exhaustion.

Severe heat exhaustion can lead to *heat stroke* which can quickly kill a person. Heat stroke occurs when the body has used up all its water and salt. The symptoms of heat stroke are easier to notice than other heat related illnesses and include dry hot skin (sometimes red in color), slowed down or no sweating, irrational behavior, loss of consciousness, and in some cases, convulsions.

Staying safe in extreme heat can be a manageable task if the guidelines designed to keep you safe are followed. To stay safe in warm temperatures do the following:

- drink plenty of water throughout the day to stay hydrated;
- wear lightweight and light colored clothing. Light colored clothing

will reflect heat away from the body. However, do not where shorts when working in hog facilities during hot weather;
- slow down when doing work in the heat. When it is hot and humidity is high, the body's cooling system has to work harder and cannot properly keep up if you are working too fast in extreme heat;
- take periodic breaks in cool shady locations;
- don't try to get a tan while working in the sun. If sunburn develops, it is harder for the body's cooling system to work;
- take notice of the early warnings of heat stress including headache, heavy perspiration, high pulse rate and heavy breathing and take a break immediately if these symptoms occur.

Key points

- Drink plenty of water to keep body fluid levels up.
- When working in extreme cold or extreme heat, take occasional breaks away from the extreme temperatures.
- Working carelessly in either extreme cold or extreme heat can lead to illness, disability or even death.
- Be alert to early warning signs of cold- or heat-related stress, both in yourself and in co-workers.

In extreme cold, **do:**

- Wear several layers of loose clothing; waterproof, insulated boots and a hat.
- Move into warm locations periodically.
- Avoid touching cold metal surfaces with bare skin.

In extreme heat, **do:**

- Drink plenty of water.
- Wear lightweight, light-colored clothing.
- Take breaks in a cool, shady area.
- Watch for symptoms of heat stress, both in yourself and co-workers.

In extreme cold, **don't:**

- Stay out in the extreme cold for extended periods of time.
- Stay in wet clothes.
- Drink anything containing alcohol or caffeine.
- Ignore symptoms of cold weather exposure.

In extreme heat, **don't:**

- Wear shorts on the job.
- Try to get a suntan while working.
- Try to keep up with the rest of the crew even though you feel ill.
- Ignore symptoms of heat stress.

Hearing Health and Safety

Your ability to hear may be put at risk by working in a hog production facility without protection. In this lesson you will learn about the importance of auditory health safety and the prevalence of hearing loss within hog operations.

It's important to have an understanding of the auditory hazards present in pork production. Auditory hazards are loud noises a worker or animal may be exposed to that can result in hearing loss. If you have been exposed to high noise levels on a farm for a number of years, chances are you have already lost some of your hearing. This type of hearing loss, which is called *noise-induced* hearing loss, is usually irreversible.

On hog farms, noise-induced hearing loss can result from exposure to the loud squealing of pigs or from being around noisy equipment or machinery such as tractors or large portable washers. Auditory hazards can also occur away from work, and since exposure to loud noise is additive, hearing protection should be worn when you are exposed to loud noise in any situation.

Vocabulary

An *audiologist* is a medical professional who specializes in hearing loss.

Auditory means associated with hearing.

Auditory hazards are loud noises a person or animal may be exposed to that can result in hearing loss.

A *decibel* is a unit used to measure the loudness of sound.

A *hazard* is a source of danger.

Hazard zones are dangerous or hazardous areas.

Hearing protection is personal protective equipment (PPE) such as: earplugs, protective earmuffs or canal caps (earplugs attached to a lightweight headband).

Personal protective equipment or *PPE* is equipment used to protect you from hazards. Examples of PPE are safety glasses or goggles, earmuffs or earplugs, back supports, kneepads and dusk masks or other respirators.

Tinnitus is a ringing in the ears that may show up before a person notices any hearing loss.

Hearing health and safety questions and answers

When talking about hearing hazards there are a series of questions commonly asked.

Question*: At first, the noise levels during certain pork production activities seemed quite loud, but now I am used to the noise. Do I still need to wear hearing protection?*

Answer*:* Yes. Even though a noise doesn't seem to be bothering you, that doesn't mean that damage is not occurring. Very often, a family member or co-worker will be the first to notice that a person is losing his or her hearing. Hearing loss often takes time and you might not notice it until the damage is severe. Remember that once you start losing your hearing, it's irreversible. Wearing hearing protection whenever you are around loud noise will help prevent further damage.

Question*: Is there any way I can tell if I have started losing my hearing before the damage is severe?*

Answer*:* The best way to tell is to see a certified audiologist, a specialist in hearing loss.

Potentially hazardous noise levels in the environment can be detected by a trained person who uses a sound level meter. Also, if you have to raise your voice to be heard by a person just an arm's length away, the noise around you is likely loud enough to damage your hearing.

Question*: Sometimes I hear a ringing in my ears. What does that mean?*

Answer*:* That ringing in the ears is called tinnitus. Many people who have noise-induced hearing loss also experience ringing, hissing, roaring, whistling, chirping or even clicking sounds in their ears. This may show up before you notice any hearing loss. If you're experiencing signs of tinnitus, be sure to see a doctor, to help determine whether you have noise-induced hearing loss.

Question: *Can't I just get a hearing aid if I lose my hearing?*

Answer: Sure you can, but the problem is that while a hearing aid will amplify sounds, it won't reverse any damage that has already been done. Also, don't think that it's just older people who experience hearing loss. If you regularly work around loud equipment or machinery or around squealing pigs and haven't been wearing hearing protection, hearing loss may have already begun.

Hearing hazards

An important first step toward auditory health and safety is identifying the source or cause of a hazard. An auditory hazard zone exists during any phase of pork production where noise levels are at or above 85 decibels. Prolonged exposure to noise levels at or above 85 decibels can result in hearing loss. Chances are you will not know how loud a noise is in an area of the pork facility so it is better to outline what areas of pork production are generally labeled as auditory hazard zones rather than testing the noise level everywhere you go.

The following are just a few examples of auditory hazard zones you should be aware of:

- the gestation barn when sows are being fed;
- working around tractors;
- feed grinders;
- banging of gates or feeders;
- aeration fans for grain bins;
- power washer motors; and
- working with or treating hogs.

As you can see from this list, working in pork production can potentially result in hearing loss if you do not take steps to protect yourself.

Hearing protection

So just when do you need to wear hearing protection? To figure this out you must know out how much time you are spending in different levels of noise. The table below provides guidelines for when you should be wearing hearing protection when working.

Exposure Time Per Day	Decibels (dBA)
15 minutes	115
30 minutes	110
1 hour	105
1.5 hours	102
2 hours	100
3 hours	97
4 hours	95
6 hours	92
8 hours	85

Determining the exact decibel level takes special equipment you may not have access to. A general rule of thumb to help determine the decibel level is if you must raise your voice to be heard by someone three feet away, the noise level is likely above 85 decibels and you need to be wearing hearing protection.

With such a high risk of hearing loss, it is important to take all possible measures to prevent the problem when working in a hog operation including:

- removing yourself from the hazard zone whenever possible;
- not being near loud machinery or equipment;
- leaving the area when you're done working in a noisy gestation barn or other noisy area where pigs are squealing;
- reducing the noise at the source (i.e. You can reduce the noise of a power washer by placing the motor outside the building or in another room.);

- moving quiet tasks outside or away from noisy equipment;
- spacing out the noisy tasks you must do throughout the day, when possible.

The most important thing you can do to protect your hearing is to wear hearing protection whenever you are around loud noise. Even if you have already started to lose your hearing it is important to wear hearing protection to prevent it from getting worse. Remember that once your hearing is gone, it is gone forever.

Types of hearing protection

Hearing protection comes in several different styles and types. It is important that the hearing protection you use is comfortable and fits correctly. Keep hearing protection nearby so you will be more likely to use it. Protective earmuffs, earplugs and canal caps are the three main types of hearing protection.

Earmuffs look like stereo headphones and are used to protect your ears from loud noises. Some types of earmuffs have the ability to amplify conversations so you can still wear them while talking to someone nearby. If you are using earmuffs, make sure the cushions fit snugly against your head, keep your hair from getting between the cushions and your head and know that in most cases you will get the best protection by wearing the earmuff band on top of your head rather than in the back of your head or under your chin. If you wear glasses, the seal of the earmuffs will be broken and they will be less effective in providing noise protection. Talk to your supervisor if you do wear glasses about using a different form of hearing protection. Finally, make sure your earmuffs stay clean. You can clean cushions with a damp cloth or a paper towel.

Foam earplugs expand and will adjust and conform to fit your ears. Some foam earplugs are disposable while others can be washed and re-used. Foam earplugs are small and can easily fit in a pocket where they will be easy to use when you need them.

To insert most foam earplugs simply roll and squeeze them lengthwise with your fingers. With one hand reach over the head and pull on the top of the ear to open the ear canal. Once the canal is open, insert the earplug and hold it there until it seals.

It is extremely important to keep your earplugs clean. If they become dirty or contaminated and are put in your ear they can lead to infections. When inserting earplugs be sure your hands are clean. Clean your earplugs with soap and water. However, be sure the earplugs are completely dry before placing them in your ears again. Disposable earplugs should be thrown away when they become hard, damaged or no longer protect you from noise. Some people develop significant build-ups of wax due to wearing earplugs. If this happens to you, earmuffs are a better choice for hearing protection

Canal caps (which are also referred to as "semi-aural" devices) are earplugs (or pods) that are attached to a lightweight headband. Because they can be quickly put on and taken off and be stored around the neck, they are a good choice for intermittent (off and on) use. They aren't generally recommended for continuous long-term use.

To insert canal caps, hold the large end of the pods and swivel them to direct the tips into your ear canal openings. Firmly push and wiggle the pods into your ear canals until a tight seal is obtained. For many people it's helpful to pull on the outer ear while pushing on the pods. Be sure not to tamper with the headband since this is the device that holds the pods in place in your ears to provide a tight seal. If you have any questions about inserting canal caps or proper use of any other hearing protection, be sure to ask your supervisor.

Hearing protection devices are labeled with a Noise Reduction Rating or NRR. The higher the NRR, the more noise the device will block. However, it is important to note that these devices are tested in ideal laboratory conditions, not the conditions in a pork facility. Instead of using NRR to base your decision in hearing protection on, choose the device based on comfort, fit and other personal needs. Do not stuff cotton in your ears to block noise; it will not work. The noises will travel right through the cotton and your hearing can still be compromised.

The most important thing to remember about hearing protection is to wear it. Wear your hearing protection in all noisy environments, even if you are not sure of the exact decibel level of the noise.

Key points

- Agricultural workers tend to have greater hearing loss than people in many other occupations.
- Learn to identify the noise levels that could damage your hearing.
- Use some form of hearing protection when you're working in a noisy environment.

Do:

- Wear properly fitting hearing protection for all noisy jobs.
- Stay as far away from the source of the noise as possible.

Don't:

- Refuse to wear hearing protection because you find it uncomfortable.
- Ignore any signs that your hearing has deteriorated.
- Remain in a noisy area for an extended period of time.

Respiratory Health and Safety

Through this lesson you will learn about the importance of respiratory health and safety, the acute and chronic respiratory hazards in hog operations, the sources of respiratory hazards and the measures necessary to prevent them. You will also learn about the proper use, fit and care of respiratory personal protective equipment or PPE.

The importance of preventing exposure to respiratory hazards cannot be stressed enough. People and animals can live days without food and water, but only seconds without air. Adherence to a company's effective respiratory health and safety program can be the difference between life and death.

It is crucial to your health and well-being that you have a complete understanding of the possible respiratory hazards you may be exposed to on the farm.

As with all other areas of the health and safety program, it is your responsibility to identify the cause and effect of hazards. You are also responsible for identifying preventative measures to protect yourself and your co-workers from injury, illness or death.

Vocabulary

An *acute hazard* is one that can affect your health as soon as you come into contact with the hazardous substance.

Ammonia is a colorless gas with a sharp, distinctive odor that can irritate eyes, throat and lungs even at low levels.

Asphyxiation is unconsciousness or death resulting from a lack of adequate oxygen, the presence of noxious agents or other obstruction to normal breathing.

Carbon dioxide is a heavy, colorless gas that can result in panting, dizziness and even death at high concentrations.

Carbon monoxide is a colorless, odorless, highly toxic gas that can build up quickly in poorly ventilated structures and result in death.

A *chronic hazard* refers to a long-term hazard that affects the body slowly and over time, resulting in long-term health effects.

A *confined space* has adequate size and configuration for an employee to enter, has limited means of access, is not designed for continual employee occupancy and may contain physical or chemical hazards. Two examples of confined spaces that contain hazards are manure pits and grain bins.

A *dust mask* is a type of filtration device to remove most small, harmful particles of dust before they reach the lungs. Two-strap dust masks are almost always recommended when pressure washing or cleaning stalls or walkways with high dust concentrations.

Endotoxins are toxic substances present in some types of bacteria.

A *hazard i*s a source of danger.

Hydrogen sulfide is a poisonous gas that is heavier than air and smells like rotten eggs at lower levels. Hydrogen sulfide can result in immediate loss of consciousness and death, even in low concentrations.

Methane is a colorless, odorless, flammable gas that is primarily an explosion hazard.

Noxious means injurious or harmful to a person's or animal's health.

Personal protective equipment (PPE) is equipment used to help protect against hazards. Some examples are safety glasses or goggles, earmuffs or earplugs, back supports, knee pads and dust masks or other respirators.

A *respirator* is a device worn over the nose and mouth to help prevent toxic gases and/or dust from entering the respiratory tract.

A *respiratory hazard* is anything that a worker or animal may be exposed to that results in unsafe and harmful atmospheric conditions within an environment, specifically, the pork production environment.

Respiratory illnesses are illnesses associated with the lungs and/or breathing.

A self-contained breathing apparatus (SCBA) is a type of respirator that must be used in confined spaces or other areas considered immediately dangerous to health and life.

Toxic means poisonous to the body.

Respiratory hazards

In swine confinement buildings, there are two basic forms of respiratory hazards. It is important to identify how certain hazards on your operation have the potential to harm or injury you. The first are long-term or chronic hazards that affect the body slowly and over time. For example, long-term hazardous exposure to dust may result in conditions such as asthma or chronic bronchitis.

Inhalation of very small amounts of dust alone is not necessarily harmful. Dust becomes harmful when organic material such as feed, fecal mater, hair, viral material and bacterial components (such as endotoxins) become attached. When these materials enter the lung a respiratory health hazard is possible. All these materials are inevitably found in pork production facilities.

The second basic type of respiratory hazard is acute or immediate hazardous exposure. Acute or immediate hazard exposures affect health as soon as people come into contact with the hazard. The most common types of respiratory hazards on a pork operation are gases. The effect of acute hazard exposure to gasses can be death.

Five important gases

There are five gases released during normal pork production: methane, ammonia, carbon dioxide, carbon monoxide and hydrogen sulfide. It is important to be able to identify these gases as well as understand the sources of the gases and what the effects of overexposure are to humans and animals. Understanding and identifying the sources and effects of hazardous exposures will help you prevent hazardous exposure to the gases and could save your life.

Methane is released during decomposition and agitation of manure. It is colorless, odorless and is usually a nontoxic gas. The only time methane can be toxic to humans and animals is when it gathers in amounts large enough to cause oxygen levels to decrease. Explosion is the key risk with methane.

Ammonia is another gas released in hog operations. It, too, is released during the decomposition and agitation of manure. Ammonia is a pungent, colorless, noxious gas, easily detected even in small concentrations and can cause respiratory irritation. Over-exposure to ammonia even in extremely low concentrations can be detected and identified. In humans, low levels of ammonia can irritate the eyes, throat and lungs. Ammonia concentrations as low as 0.5 percent can cause suffocation. For hogs, ammonia concentrations at non-lethal levels can cause symptoms such as sneezing, increased salivation and loss of appetite. Chronic exposure can result in increased susceptibility to respiratory diseases.

Carbon dioxide is released during the respiration of animals. It is a heavy, colorless gas that can cause respiratory rates to increase at high levels. Humans will have no reactions at low levels, however, at a 10 percent concentration level, carbon dioxide will cause panting and dizziness. In animals, a four percent concentration would cause a noticeable increase in respiration rate and could lead to death.

Carbon monoxide is also found in hog facilities. It is released from unvented heaters and gas-powered power washers. Carbon monoxide is hard to detect, as it is both colorless and odorless. Carbon monoxide

is an extremely toxic gas and can kill humans exposed to high concentrations.

The final of the five gases found in hog facilities is **hydrogen sulfide.** This gas is released during decomposition and agitation of manure. Hydrogen sulfide is a flammable, poisonous gas and smells like rotten eggs. Hydrogen sulfide is extremely dangerous because concentrations of the gas as low as one-tenth of a percent cause an immediate loss of consciousness and death in humans. If exposed to amounts lower than this, you may experience severally irritated eyes, throat and lungs. As the concentration increases, humans will vomit, suffer from diarrhea and can eventually die. If animals are constantly exposed to low levels of hydrogen sulfide it will cause them to become fearful of light, nervous and they will lose their appetite.

Ventilation

If in the facility there is a time when these gases have reached a level in which they become hazardous to humans and animals, it is important you know how to act to safely eliminate the gases. The risk of high levels of these gases is increased during the agitation of manure. To control and reduce the level of toxic gas in a hog building, try to dilute the gas by maintaining proper ventilation and by bringing fresh air into the contaminated area. Use fans and open curtains, doors and windows to introduce fresh air into the contaminated area.

If you suspect there are hazardous levels of toxic gas in an area, DO NOT enter the area. This can only cause sickness or injury. Even if you look into the area you believe is contaminated and see there are people or animals down do not enter. In the situation where people are down in the room immediately contact emergency medical services according to the facilities' Emergency Action Plan. If you notice it is only animals that are down, go directly to your supervisor and inform him or her of the problem.

Entering the area

If for some reason you absolutely must enter an area containing hazardous levels of toxic gas protect yourself with a supplied-air

respirator, wear a harness with a lifeline and have another person that can be in contact with you standing immediately outside the area. The two main types of supplied-air respirators are air-line respirators and self-contained breathing apparatus or SCBA.

Personal Protective Equipment (PPE)

Personal protective equipment (or PPE) such as masks and respirators can help you do your job safely and help to prevent long-term health effects. Wear the PPE that is best suited for the job you are performing. Your employer will help determine which PPE is necessary and appropriate for each job. Keep your PPE clean and in good shape and always return PPE to its proper storage place when you are finished using it.

Respirators and dust masks help block the entry of harmful gases and dust into the lungs. Be sure to wear a respirator or dust mask while performing work in designated areas where you may be exposed to harmful dusts, gases or sprays. Wear a SCBA or other supplied air respirator if you are authorized to enter a confined space such as a manure pit or grain bin. Notify your supervisor if maintenance or entry into a confined space is necessary and never enter a confined space alone or without proper equipment and proper authorization training.

You will need to demonstrate to your employer that you are able to wear and work a respirator. Be careful of any eyewear, facial hair, deep facial scars or deformities that might prevent a secure fit. You should be able to feel the suction in the fit. If you can smell any odor or feel any irritation when working with chemicals, the fit is not secure.

There are two categories of respirators. Your employer will help determine which one is right for your particular situation: air-purifying respirators and supplied-air respirators. Air-purifying respirators are equipped with filters through which the wearer breathes. These respirators do not supply oxygen to the person wearing it.

Instead, they filter the air already present. Examples of this type of respirator include: mechanical filter respirators, chemical cartridge respirators, gas masks and powered air-purifying respirators.

The other type of respirator you may use is a supplied-air respirator. This is the only type of respirator you should use when working in areas considered immediately dangerous such as manure pits, sealed silos or fumigated bins. There are two types of supplied-air respirators, an air line respirator and self-contained breathing apparatus. A supplied-air respirator can do more than just protect your health in a dangerous area; it can save your life. You must adhere to the respiratory safety procedures set forth by your employer. If your employer approves you to wear a supplied-air respirator when working in dangerous areas, always wear it.

Key points

- Minimize exposure to dust.
- Minimize exposure to hazardous gases.
- Personal protective equipment for respiratory health and safety.

To prevent chronic respiratory illness due to dust, **do:**

- Achieve dust control and reduction by doing regular facility washdowns.
- Achieve filtration through wearing a dust mask.
- Achieve dilution by bringing fresh air into the contaminated area to improve the average conditions of the air.

To prevent acute respiratory illness due to gasses, **do:**

- Dilute toxic gases by maintaining proper ventilation and bringing fresh air from the outside into the contaminated area by using fans and opening curtains, doors and windows.
- Protect yourself with a supplied-air respirator if you must enter an area in which you suspect hazardous levels of a toxic gas.
- Make sure your respirator fits properly.

To prevent chronic respiratory illness due to dust, **don't:**

- Wear a dust mask that doesn't fit you properly.

To prevent acute respiratory illness due to gasses, **don't:**

- Enter an area in which hazardous levels of a toxic gas are suspected.
- Wear a respirator that doesn't fit you properly.
- Wear a respirator that has not been approved for the specific hazard you are protecting yourself against.
- Enter a confined space without authorization, alone, or without proper equipment.

Personal Protective Equipment

Everyday in the hog facility you wear some sort of personal protective equipment, or *PPE*. Whether you think about it or not, every piece of equipment you wear serves the purpose of keeping you safe. PPE includes:

- steel toe boots
- gloves
- safety glasses and goggles
- overalls
- face masks
- respirators
- ear plugs or earmuffs
- knee pads
- back supports

Vocabulary

A *dust mask* is a type of filtration device used to remove most small, harmful particles of dust from the air you breathe before they reach the lungs. Two-strap dust masks are recommended when pressure washing or cleaning stalls and walkways with high dust concentrations.

Hazards are sources of danger.

The term *hearing protection* refers to earplugs, protective earmuffs or canal caps (i.e. earplugs attached to a lightweight headband) that should be worn in high-noise areas.

A *respirator* is a device worn over the nose and mouth to help prevent toxic gases and/or dust from entering the respiratory tract.

Using PPE

When using PPE, you should wear the equipment for the entire time you are working on the task requiring it. If you take PPE on and off while doing a task you will not be adequately protected. Know how to correctly wear the PPE and make sure that it fits properly to prevent injuries.

Keep your PPE clean and in good shape and check it for damage each time your wear it. If you notice it has become damaged or worn, inform your supervisor so it can be fixed or replaced.

Store your PPE in the proper storage location when you are done using it. Never store the equipment in areas with chemicals that are being used or stored.

Key points

- Personal protective equipment (PPE) can help you do your job safely.
- PPE is designed to protect you from loud noises, dust, chemicals and other substances that can harm your health – either now or in the future.

Do:

- Always wear the correct protective clothing and equipment for the job.
- Wear hard or steel-toed work boots or shoes at all times.
- Turn off tools before removing safety goggles.
- Inspect eye protection before wearing it.
- Use eye protection and gloves when working with a sick animal or giving a shot (eyes and open wounds allow some livestock diseases to be introduced into humans).

Don't:

- Wear loose, ripped, or baggy clothing.
- Wear worn-out footwear, or shoes with frayed or long laces that could get caught in equipment.

Hand and Power Tool Safety

All tools are manufactured with safety in mind but, tragically, they're often the cause of serious accidents. Learn how to recognize the hazards associated with different types of tools and the safety precautions necessary to prevent those hazards.

Vocabulary

Lockout is the act of disabling the use of a downed piece of equipment by securing it with chains or padlocks.

Tagout is the process of placing a warning tag such as "Do Not Operate" on a power source and a downed piece of equipment during a lockout.

Hand tools

Hand tools are non-powered, yet they pose the greatest hazard when misused or improperly maintained, for example, in the following manner:

- using a screwdriver as a chisel which may cause the tip of the screwdriver to break and fly, hitting the user or other employees;
- using a hammer or an ax with a loose, splintered or cracked wooden handle, which may allow the head of the tool to fly off and strike the user or another worker;
- using a wrench when its jaws are sprung, which may allow it to slip; and
- using impact tools such as chisels, wedges or drift pins when they have mushroomed heads, which may cause the heads to shatter on impact and send sharp fragments flying.

General safe practices for using hand tools include:

- directing saw blades, knives, or other tools *away* from aisle areas and other employees working close by;
- keeping knives and scissors sharp (Dull tools can be more hazardous than sharp ones);

- wearing appropriate personal protective equipment (e.g., safety goggles, gloves, etc.) while using portable power tools and hand tools;
- keeping floors as clean and dry as possible to prevent accidental slips with or around dangerous hand tools;
- using spark-resistant tools made from brass, plastic, aluminum or wood to reduce dangerous ignition sources around flammable substances;
- using hand tools for their intended purposes only; and
- maintaining them in safe working condition.

Power tools

General safe practices for using power tools include:

- never carrying a tool by the cord or hose;
- never pulling the cord or the hose to disconnect it;
- keeping cords and hoses away from heat, oil, and sharp edges;
- disconnecting tools when not in use, before servicing, and when changing accessories such as blades, bits and cutters;
- avoiding accidental starting by never holding a finger on the trigger while carrying a plugged-in tool;
- keeping tools sharp, clean and/or lubricated following instructions in the user's manual;
- keeping good footing and maintaining good balance whenever using the tool;
- wearing the proper apparel and tucking in any loose clothing or drawstrings, and removing any jewelry that can become caught in moving parts;
- removing all damaged portable electric tools from service and tagging them "Do Not Use";
- using power tools for their intended purposes only, and maintaining them in safe working condition;
- keeping all required guards and safety devices on tools and machinery in place and functioning properly; and
- making sure all electric powered hand tools are equipped with a constant pressure switch that will shut off the power when the pressure is released (any positive "On-Off" control switches or lock-on devices must be removed prior to first use).

Key points

- Use hand and power tools for their intended purposes only.
- Maintain tools in safe working condition.
- Keep all required guards and safety devices on tools in place.

Do:

- Inspect electrical tools regularly; report faulty equipment to your supervisor.
- Use hand and power tools for their intended purposes only.
- Maintain them in safe working condition.
- Keep all required guards and safety devices on tools in place.

Don't:

- Use faulty equipment.
- Attempt to repair a tool yourself.
- Unplug a power tool by pulling on its cord.
- Use dull tools.

Hazard Communication Program

("Right to Know Law")

OSHA (Occupational Safety and Health Administration) has created a standard for Hazard Communication that must be followed in the pork production facility.

The goal of the program is to reduce the incidence of chemical related illness and injury. Chemicals pose a wide range of health hazards (i.e. irritation, sensitization, carcinogenicity, etc.) and physical hazards (i.e. flammability, corrosion, reactivity, etc.) by giving information about health hazards and associated protective measures is given to workers and employers.

This law has made Material Safety Data Sheets (MSDS), Hazard Communication Labels and logging of all chemicals used in the operation mandatory.

In this lesson you will learn what they are, why MSDS are important, what information they contain and where you can find the MSDS Master File at your site. Second, you will learn what Hazard Communication Labels are, why they are important, what information they contain and what your responsibilities are concerning hazard communication labels.

Vocabulary

A *hazard* is a source of danger.

What is OSHA?

The Occupational Safety and Health Administration (OSHA) is a federal government organization that creates and enforces rules and regulations to provide a safe working environment for employees.

Some of the basic regulations you need to know about are:

- The Right to Know Law;
- Lockout/Tagout procedures;
- Confined Spaces precautions;
- Respiratory Protection requirements; and
- Emergency Action Plan requirements.

Be informed

Manufacturers are required to place *hazard communication labels* (under the Right to Know Law) on all chemical containers. They contain the chemical's name, the manufacturer's name and address and a hazard warning for the chemical.

Manufacturers are required to provide an MSDS or Material Safety Data Sheet (under the Right to Know Law) with every chemical. It gives information about the chemical, its potential hazards and how to safely work with it.

The *Right to Know Law* (under OSHA) is the right of employees to know what chemicals they may come into contact with, the chemicals' effects on the body and how to safely handle them. It covers and includes *MSDS* and *Hazardous Communication Labels*.

MSDS

Every hazardous chemical, animal drug and vaccine you will use on the farm is required to have an MSDS provided by the manufacturer. The MSDS will tell you detailed information about the chemical you may come into contact with such as potential health hazards and how to handle the chemical safety. The law requires the information found on MSDS labels be kept on the farm. When you have a chance, take the opportunity to review this material. The more informed you are about a chemical or product, the safer your work will be with it. Additionally, you will need to demonstrate to your employer that you can identify certain parts of the MSDS like information related to health hazards, first aid procedures and fire hazards.

Hazard Communication Label

Along with an MSDS, each hazardous chemical will also contain a Hazard Communication Label. On this label you will find the name of the chemical, the manufacturer's name and address and a hazard warning. When you are working with hazardous chemicals wear the correct personal protective equipment as indicated on the MSDS and/or Hazard Communication Label. You should have a thorough understanding of hazard warnings. These warnings include a picture

of the PPE (personal protective equipment) needed to handle the chemical and could include a drawing of the hazardous effects. Common labels will include colors and numbers.

If you are transferring a chemical into a smaller container always write the chemical's name and warning on the new container. If you must move the chemical to an even smaller container for one shift, you should also write the information on the new container. Return the remainder of the chemical to the original container or throw it away as outlined in your facility's hazardous materials disposal procedures.

Different hazards are denoted by different colors on the Hazard Communication Label. Blue will give the health hazard ratings and information. Red indicates flammability. Yellow will inform you of the reactivity of the chemical if it is mixed improperly or due to temperature and pressure changes. White lists specific hazardous conditions and information.

On the Hazard Communication Labels you will find a number indicating the hazard level of the chemical. The numbers are on a scale of 0 to 4, with 0 indicating a minimal hazard; 1 is a slight hazard; 2 is a moderate hazard; 3 is a serious hazard; and 4 indicates a severe, or life threatening, hazard if handled.

Key points

- All hazardous materials must be labeled.
- All hazardous materials must have a Material Safety Data Sheet (MSDS).
- Employers must keep a current log of all hazardous chemicals used in their operation.

Do:

- Identify and label all portable containers.
- Obtain MSDS for all chemicals in the workplace.
- Maintain an inventory of all controlled products used in the workplace.

- Replace labels as necessary.
- Address leaking chemicals and spills immediately.
- Read the product label and MSDS before using any chemicals for the first time.

Don't:

- Remove labels.
- Handle chemicals without appropriate personal protective equipment (PPE).
- Use a chemical if it has no label or MSDS.
- Mix chemicals unless specifically directed by the chemical supplier.
- Trust appearance as an indicator of safety.

Confined Space Program

Working in the hog facility may require you to work in confined spaces. This section will define a confined space so you will know if you are working in one, and explain the proper working procedure is within a confined space.

There are 2 types of confined spaces, non permit-required and permit-required. In this lesson we will look at *permit-required confined spaces*.

Vocabulary

Asphyxiation is a condition that causes unconsciousness or death from lack of adequate oxygen, the presence of noxious agents or other obstruction to normal breathing.

A l*ockout* is the act of disabling the use of a downed piece of equipment by securing it with chains or padlocks.

A *permit-required confined space* is an area that has adequate size and configuration for an employee to enter, has limited means of access, is not designed for continual employee occupancy, and it may contain physical or chemical hazards. Two examples of confined spaces that contain hazards are manure pits and grain bins.

A *non-permit confined space* is similar to permit-required space, but does not contain atmospheric hazards, and does not have any hazard capable of causing death or serious physical harm. Two examples are attics and crawl spaces.

A *respirator* is a device worn over the nose and mouth to help prevent toxic gases and/or dust from entering the respiratory tract.

A self-contained breathing apparatus (SCBA) is a type of respirator that must be used in confined spaces or other areas considered immediately dangerous to health and life.

Tagout is the process of placing a warning tag such as "Do Not Operate" on a power source and a downed piece of equipment during a lockout.

Obey all warning signs

Always obey warning signs such as "No Entry" posted near confined spaces, especially when they are near pits and grain bins. If you are properly trained for the task you are performing and you must enter a confined space, be sure to take the following precautions:

- notify your supervisor that you will be working in a confined space;
- follow all appropriate lockout/tagout procedures;
- wear a harness attached to a lifeline; and
- wear other appropriate personal protective equipment and know how to correctly use it.

As an example, wearing a respirator can prevent asphyxiation and suffocation. However, these devices are useless if you do not put them on correctly or use the wrong type of respirator. Even if you have been trained and have proper equipment, it's important not to enter a manure pit or other confined space unless there is another person who will remain immediately outside the entire time you are in it. That person should be trained in first aid and CPR and must be able to maintain contact with you.

Key points

- Confined spaces can be extremely dangerous.
- Enter a confined space only if you have been trained in, and follow, proper safety procedures for it.
- Do not try to rescue a co-worker trapped in a confined space without necessary equipment, approval, training and backup support.
- Make sure the local emergency services department knows that they are your designated outside rescue team.

Do:

- Enter a confined space only after being properly trained to do so.
- Obtain management permission before entering a confined space.
- Test the air of a confined space before entering it.
- Follow the safety procedures for working in a confined space.

Don't:

- Try to rescue a co-worker trapped in a confined space without necessary equipment, approval, training and backup support.
- Use respiratory protection unless you are properly trained and have performed a fit test.
- Enter a manure pit without a harness, SCBA, and outside observer/ attendant.

The manager/supervisor must administer the permit system for all permit-required confined spaces. The permit must contain:

- SIgnature of authorized entrant
- Time duration of permit
- Termination of procedures
- Additional information such as date, hazards, approver's name
- Additional items as required by OSHA

Requirements of entrant

The permit-required entrant must understand:

- The existing or potential hazard of the confined space
- The signs and sumptoms of exposure to a hazard

Requirements of attendant

The permit-required entry attendant must:

- Understand the entry hazards
- Remain outside the permit space
- Communicate with entrant
- Be able to contact emergency help

Requirements of entry supervisor

The permit-required entry supervisor must:

- Understand the potential hazards
- Determine if acceptable entry conditions currently exist
- Verify that rescue methods are available
- Monitor entry and work conditions so they remain consistent with the permit

Lockout/Tagout Program

Lockout and tagout procedures should be performed to protect yourself when servicing equipment, . This lesson will outline the purpose of lockout/tagout, how to perform lockout/tagout and what equipment requires lockout/tagout procedures.

Vocabulary

A *hydraulic* machine or tool is something operated, moved or effected by means of water or other liquid.

Lockout is the act of disabling the use of a downed piece of equipment by securing it with chains or padlocks.

A *pneumatic* machine or tool is a device moved or operated by air pressure.

Tagout is the process of placing a warning tag such as "Do Not Operate" on a power source and a downed piece of equipment during a lockout.

Service safety

Servicing equipment is a common task on the farm; however, to decrease the risk of injury when working with machinery there are a series of steps you need to follow before starting maintenance.

1. Before beginning any repairs, **shut down the power source** to the piece of equipment you will be working on.
2. Next, **isolate the equipment** with padlocks and chains.
3. Place a **warning tag**, such as "Do Not Operate" on both the equipment and the power source to prevent someone else from trying to turn the broken piece of equipment on.
4. After completing these steps safely **release any stored energy** in the equipment.
5. After checking that all others are out of the way, **attempt to restart** the equipment to make sure it won't move during servicing.

In pork production, lockout/tagout is done on equipment that is electric, hydraulic, pneumatic or is subject to the effects of gravity. All equipment using a power source is therefore required to be locked out or tagged out when being serviced. Examples of this type of equipment are lights, grinders, heaters, fans, PTOs, augers and feed mixers.

Your employer will issue lockout/tagout devices to those in the facility who have demonstrated they can properly perform such procedures. If you are not certified to operate or service certain pieces of equipment, for both your safety and to prevent damage to the equipment do not attempt to fix them.

Key points

- Locking out is intended to prevent the unexpected start-up or energizing of machinery and equipment during service and maintenance operations.
- Tagout should only be used with lockout, unless locking out the equipment is impossible.
- Locking out and tagging power at its source is important while repairing or adjusting machinery because it ensures that power does not reach the machinery.
- Accidents, which occur because machinery that is being repaired and not locked out, often results in serious injuries, like amputations, fractures and even death.

Do:

- Lockout equipment before repairing it (remove the keys),
- Lock the main switch.
- Test the controls to make sure they are definitely inoperative.
- Replace all guards on the machinery after servicing.
- Follow the operation's safety procedures for lockout/tagout.

Don't:

- Leave keys in the locks.
- Forget to test the controls to ensure they are definitely inoperative.

Pig Behavior and Characteristics

Staying safe when working with pigs requires you to always be aware of the pig's behavior and understand what that behavior means. In this lesson you will learn the general behaviors and characteristics of all pigs, at different stages of the lifecycle and how important it is to your safety to understand pig behavior and characteristics.

In pork production, more injuries occur during direct contact with the animal than in any other activity. Learning pig behavior will enable you to handle pigs without the need for excessive force, thus reducing the risk of injury to yourself and to the pigs. Always be aware of your surroundings and your body position in relationship to the pigs. This will allow you to safely handle both individual pigs and groups of pigs.

Vocabulary

A *boar* is an intact (uncastrated) male pig. Boars are unpredictable, and become very large and powerful.

Farrowing is the normal delivery of one or more live, stillborn or mummified (dried up and shriveled) pigs on or around the 114th day of pregnancy.

The *flight zone* is the nearly 360-degree area around a hog that the animal can see.

A *gilt* is a female pig that has not yet delivered a litter of pigs.

Hogs are pigs of any size.

The *nursery* is a place for housing pigs following weaning.

A *piglet* is a young pig of either sex.

The *point of balance* is the location from the middle of the pig to the front shoulder.

A *sorting board* is a plank of wood or plastic large enough to shield a person from a hog's body. Also called a *cutting panel* or *cutting board*.

A *sow* is female hog that has had at least one litter of pigs.

Weaning is removing the piglet from its mother.

Behavior characteristics

Pigs have a low center of gravity, which makes them quick in small spaces and capable of knocking a person down. Like a small, low to the ground football running-back, pigs can run through small openings, move very quickly to an open space and elude people.

Pigs would rather run than fight. They have a defensive perimeter called a flight zone. The pig uses this defense mechanism to distance itself from people and objects that it's not familiar with or feels threatened by. A pig's range of vision is nearly 360 degrees with the only blind area directly behind the pig. When a person or object penetrates the pig's flight zone, the animal will move in an opposite direction. If the person or object is removed from the flight zone, the animal will usually stop.

A pig's decision to move forward or backward is determined by the point of balance. This location is from the middle of the pig to the front shoulder. To move a pig forward, enter the animal's flight zone just inside its range of vision and behind the point of balance. If something unfamiliar or threatening gets in front of the pig, it will stop or turn back. For example, when moving a pig down a hallway and it comes upon a bucket left in the alley, the pig makes a decision to go forward, stop, or turn around and run. That decision is based on what appears to be more threatening – the person behind or the bucket in front. If the pig is familiar with human contact, but not the bucket, it will either stop or reverse its forward direction. If, on the other hand, the pig is familiar with the bucket, it will ignore the bucket and continue down the hallway.

Pigs follow each other in group formations so it is easier to move a group of pigs forward when the leaders are prompted. Prodding the pigs in the back of a group will not necessarily move the entire group forward.

Pigs can be broken into four different sub-groups. These groups are **boars**, **sows**, **nursery pigs** and **grower**, or **finisher pigs**. While they are all pigs, each of the groups has unique characteristics you should be aware of when working with them.

When mating, **boars** will exhibit a unique set of behaviors. The boar will grunt, nuzzle, chomp and salivate a great deal when it comes into contact with the sow. The boar will also contact the sow nose to nose or nose to genital area. It will lift or push the sow in the rear flank area. None of these things are a threat to you as the handler unless the behavior is disrupted. Working with boars presents a number of safety challenges you will not encounter with other types of pigs.

Boars have tusks that can very easily harm you. A boar can simply raise his head and drive his tusks into you to cause injury. Boars are very unpredictable animals, so you should always be aware of the animal and your position to it so you may protect yourself if the boar becomes aggressive. If you need to separate a boar from another pig, use a sorting board for your safety and the animal's safety.

Boars are very deceiving animals. In some situations they may seem tame and unthreatening, but then become suddenly aggressive. Therefore, you need to be constantly aware of what the boar is doing when you are near him. One of the greatest defenses a boar has is its size and strength. Do not underestimate the physical power of boars when working with them.

Sows are usually very docile animals, but can become very protective and aggressive if they feel their litters are being threatened or they are stressed from farrowing. Gilts can become stressed or aggressive when they are farrowing. When sows or gilts are in heat and exposed to boar smells, they will naturally lock up and become stiff-legged. When this happens it becomes very difficult for you to try to move them.

Although **piglets** may seem like very small and harmless animals, they too have their own defense mechanism. Newborn pigs have very sharp needle teeth, and they will use these teeth very effectively against other pigs in the litter. This is really the only defense mechanism piglets have, and as a worker, you will generally never become seriously injured, but you can still receive cuts and abrasions from these sharp teeth.

Grower or **finisher pigs** possess many general characteristics that are applicable to all pigs. They are by nature very social animals and want to be around other pigs. Because of this, it is easier to move pigs in small groups so they can follow others. Pigs do not like to be separated from the group and will become excited or stressed if you do so, and become unpredictable. As a pig grows it will pose a greater physical threat to you, simply because of its size. When you enter a pen in the finisher facility, the pigs will be curious about you and may chew on your pants or boots.

Key points

- Learning pig behavior will enable you to handle pigs without the need for excessive force, thus reducing the risk of injury to yourself and to the pigs.
- Always be aware of your surroundings and your body position in relationship to the pigs.

Do:

- Be aware of surroundings and body position in relationship to pigs.
- Know and understand a pig's behavior characteristics.
- Exercise caution in working with hogs.

Don't:

- Enter a pig's flight zone outside its range of vision.
- Use excessive force in working with pigs.

Safe Animal Handling - General

Lack of knowledge of animal characteristics and working in poor animal handling facilities without the proper knowledge of animal behavior can be a lethal combination. Always be on guard when working with, or around, animals.

Vocabulary

A *boar* is an intact (uncastrated) male pig. Boars are unpredictable, and become very large and powerful.

Breeding is the sexual activity between a male and female pig that may result in conception and the bearing of offspring.

Farrowing is the normal delivery of one or more live, stillborn or mummified (dried up and shriveled) pigs on or around the 114th day of pregnancy.

The *flight zone* is the nearly 360-degree area around a hog that the animal can see. Intersecting one area of the flight zone will cause the animal to move in the opposite direction.

A *gilt* is a female pig that has not yet delivered a litter of pigs.

A *hog* is a pig of any size.

The *nursery* is a place for housing pigs after weaning.

A *piglet* is a young pig of either sex.

A *sorting board* is a plank of wood or plastic large enough to shield a person from a hog's body. Also called a *cutting panel* or *cutting board*.

A s*ow* is a female hog that has had at least one litter of pigs.

Weaning is the process of removing a piglet from its mother.

Injury statistics

The majority of accidents on a hog farm occur during human/animal interaction. In fact, one three-year study showed that more than 99,000 non-fatal livestock-related injuries occurred in the United States during that period. It's important that you pay close attention to the potential dangers of working with pigs, and that you always use correct animal handling techniques. Attention to these dangers is a key to your personal safety.

Pigs are intelligent and perceptive. Your attitude is crucial in preventing injuries to you and to the pigs you handle. Learn to respect and appreciate animal behavior to help you avoid accidents and injuries. Policies have been created to help keep the workplace safe and healthy, and with your cooperation, safety of the workplace can be improved for you and your co-workers. You are also encouraged to offer ideas to improve safety and required to follow all of the safety rules and procedures your facility has in place.

Hog's eyesight

A pig has a range of vision of almost 360 degrees. This fact dictates the way you should load and unload pigs to make the move faster and easier for you. It's best if loading ramps and handling chutes have solid sidewalls to prevent the animals from seeing distractions outside the chute. Moving objects and people seen through the sides of a chute can cause balking or frighten the animal.

Blocking vision will stop escape attempts and will lower the pigs' stress level. This is why a solid, portable sorting board is so effective for handling pigs. It's also important to know that pigs will often balk and refuse to walk over a drain grate, hose, puddle, shadow or change in flooring surface or texture. Pigs also have a tendency to move from a dimly illuminated area to a more brightly illuminated area, provided the light is not glaring into their eyes. A spotlight directed onto a ramp will often help facilitate entry.

Transporting pigs

Studies have shown the transporting process puts pigs under a great deal of stress. When loading or unloading pigs your objective is to move the animals as quickly and efficiently as possible while ensuring that neither the pig's health or your safety is put at risk.

When moving pigs, limit the size of the group so you will be able to safely manage them. To determine how many pigs should be moved at a time, consider two things: the size of the animals to be moved and the physical layout of the work area. Although you can choose how few pigs you feel comfortable moving at a time, there are limits on the maximum number of pigs being moved. When moving pigs to the nursery the group should not exceed 20. The number of pigs allowed in a group being moved into the finisher is 10. And when leaving the finisher have no more than five. Breeding stock should be moved in groups of no more than three to five pigs.

Zoonotic diseases

No matter what stage of pork production you are working with, you should always be concerned with zoonotic diseases, illnesses that can be transmitted between humans and animals. Included among the diseases from exposure to zoonotic agents in swine are: brucellosis, *Erysipelothrix, Streptococcus suis* meningitis, ascariasis, swine influenza, scabies, ringworm, leptospirosis, salmonellosis and cysticercosis.

You can contract a zoonotic disease by being bitten by an infected animal, having contact with or ingesting contaminated bodily fluids or feces or disposing of the infected tissue. To reduce your risk of exposure use basic hygiene and sanitation practices such as:

- promptly treating or disposing of infected animals;
- properly disposing of infected tissues;
- properly cleaning of contaminated sites;
- correctly using personal protective equipment such as eye protection and gloves as necessary to prevent disease from entering through the eyes and open wounds;
- washing and covering any cuts or scrapes that you may get; and
- washing your hands often.

Dead animal removal

When an animal has died in its pen or stall, it is important to remove the animal as soon as possible. The longer the pig is dead, the harder it is to move.

When moving a dead pig, be careful not to strain or pull muscles. Never try to remove a dead animal from the facility without some sort of assistance and if available, use mechanical devices like a hog cart or hand truck to help remove the dead animal.

If you do not have access to a mechanical device, use a humane snare or rope to remove the animal. Even with the help of these devices, never try to remove a large dead animal by yourself: find a co-worker to assist.

Key points

- Know the characteristics of animal vision and hearing.
- Limit the size of the group of pigs when moving them.
- Know how to avoid zoonotic disease and how to treat exposure to zoonotic diseases.

Do:

- Know characteristics of animal vision and hearing.
- Maintain housekeeping.
- Touch animals gently.
- Avoid the kicking region when approaching an animal.
- Maintain even lighting.

Don't:

- Expose animal to loud noises and quick movements.
- Clutter alleyways and walking surfaces.
- Enter a small-enclosed area with an animal unless you have an escape route.
- Overcrowd pens or chutes.

Safe Animal Handling - Breeding

Handling animals during breeding can result in high numbers of injuries. These injuries may occur for three main reasons; first; all the tasks being performed put you in close contact with the pigs; second, the pigs are very large; and third, the workplace is tight.

Depending on what type of breeding your facility practices, different hazards will be present. In natural breeding, injuries usually occur when the boar and sow are together. Slippery floor conditions due to manure, urine and semen spillage may cause the boar to slip and fall on you. Be sure to keep the pens clean and dry. Some facilities use a slip-resistant floor covering to minimize slippage. Also, make sure you are always aware of your position in relation to the animals. Position yourself behind the pigs and at a safe distance. In addition to a slippery floor, a boar may have trouble locking up with a sow. The boar may fall off and injure you if you are standing too close.

Artificial insemination

Injuries during artificial insemination, or AI, can occur when the boar is introduced to the mount and during the collection process. As in natural breeding, slippery floor conditions due to manure, urine and semen spillage may cause the boar to slip and fall on you. Be sure to keep the collection station clean and dry. Again, some facilities use a slip-resistant floor covering to minimize slippage.

Make sure you are always aware of your position in relation to the animals. Position yourself alongside and behind the boar. Do not sit down to collect the semen (stay on your feet), and be sure you have space to move away from the boar if he slips off the mount.

Be very careful during the artificial insemination of the sow, too. To stimulate the sow, you will press or lean on its back prior to inserting the AI rod. Because AI is usually done when the sow is in a stall, it is very important to be aware of the sow's movements and the position of your hands. If the sow jumps and catches your hand between the stall and her body, your hand or fingers could get crushed without warning. Boars are known to become aggressive. During the breeding process

a boar may become aggressive when it is having trouble locking up with a sow, during the semen collection process as well as when it dismounts. You will also notice the boar becoming more aggressive when coming into contact with another boar or if, for some reason, he becomes instinctively protective. When the boar and sow are breeding be sure to never position yourself between them.

Moving animals

Be careful when moving the sows into the breeding area. You will again have direct contact while moving them, restraining pigs and, possibly administering some injections during this stress-inducing time. Be cautious to reduce the risk of back and neck strains or slips and falls, which are common at this time. Use sorting boards, plan ahead and develop an escape route if it becomes necessary to quickly get out of the area.

Key points

- Understand and prepare for the dangers present in a hog breeding operation.
- Know where to position yourself during semen collection and during artificial insemination to avoid injury.

Do:

- Keep pens clean and dry.
- Position yourself alongside and behind a boar during mounting and semen collection.
- Maintain housekeeping.

Don't:

- Sit down to collect the semen.
- Stand too close to the boar during semen collection.
- Position yourself between the boar and the sow during breeding.

Safe Animal Handling – Farrowing and Weaning

Although you may not realize it, there are many hazards and potentially hazardous situations in the farrowing area of pork production including:

- fire
- washing
- moving sows
- processing piglets
- repetitive motion injuries
- needle sticks
- moving, sorting and transporting hogs

Fire

There's always the potential for fire in the farrowing barn because supplemental heat is used to warm the piglets. Make sure supplemental heat sources are properly adjusted and spaced safe distances from combustible materials.

Washing and moving sows

Washing and moving sows creates a slipping hazard in the farrowing area. Wash sows in small groups to reduce potential injury to you and them. Before bringing sows into the wash area, make sure it is sturdy enough hold the animals that will be washed. When you enter the wash area, be aware of your position so you do not get pushed or stepped on by the sows.

Pigs like to move in groups, and follow the leader. Take advantage of this by moving the pigs in small, manageable groups and push the leader, not the pigs at the back of the group.

Processing piglets

Processing young piglets can also lead to injury if you are not careful. Punctures, cuts and needle stick injuries are among the most common injuries and occur when clipping teeth, giving shots, cutting tails,

notching ears, tattooing and castrating. You may process hundreds of pigs in one day working in a large sow complex. Stay focused and attentive. Fatigue increases your chances of injury so take advantage of scheduled breaks so you do not become overtired and in order to stay focused.

As a result of repeating the same physical motion, you could develop a repetitive motion injury such as carpal tunnel syndrome. This is a disorder that occurs when a nerve that runs from the forearm into the hand becomes pressed or squeezed at the wrist. Carpal tunnel is characterized by discomfort and weakness in the hand and a person may have symptoms in one or both hands. Among the first symptoms are: numbness and tingling in the hand and fingers; pain in the wrist, palm or forearm; more numbness or pain at night than during the day; more pain as the hand or wrist is used; trouble gripping objects; and weakness in the thumb. Physically altering how you perform the repetitive activity (such as by changing hands) is one way to help reduce the risk of developing carpal tunnel syndrome. If possible, keep your wrist in a neutral position. Gently stretching your hands and fingers during short breaks can also help.

Avoiding hand injuries

Injecting sows in stalls often leads to hand injuries. These can occur if your hand is caught between the stall and the sow's body when she jumps. Your hand or fingers could get crushed without warning.

Needle stick injuries can occur if the pig suddenly jumps or moves. This type of injury has also been known to occur when employees carry syringes with needles loaded with medication in their pockets. Needle stick injuries are not to be taken lightly. Certain antibiotics and other medications designed for animals can result in severe medical reactions, or even death, if they are injected into a person while others can cause tissue irritation or inflammation. Others (such as reproductive hormones), can result in miscarriages if accidentally injected into a pregnant woman.

Never carry a syringe and needles in pockets, use bent or damaged needles. Be sure to change needles often.

Always read the package insert, label and material safety data sheet or MSDS for the medication being administered. This will give you important safety information. Only use the product as directed on the package or label. In case of accidental injection, immediately wash the area with soap and water and report the incident to your supervisor. If you, or your supervisor, are concerned about a potential reaction you should see a doctor.

If a co-worker is accidentally injected with a medication and has a seizure, stops breathing or has a different severe reaction, call 911 immediately to summon professional emergency medical help. All accidental injections must be reported to your supervisor, immediately.

Key points

- Understand the hazards and precautions of working in a farrowing and weaning operation.
- Understand how to safely administer medications to pigs and what to do in case of accidental needle sticks.

Do:

- Wash sows in small groups to reduce potential injury.
- Moving pigs in small, manageable groups and push the leader, not the pigs at the back of the group.
- Take advantage of scheduled breaks to avoid fatigue.
- Physically alter how you perform any repetitive activity (such as by changing hands) and gently stretch your hands during short breaks.
- Keep your wrist in a neutral position.
- Read the package insert, label and MSDS for any medications administered to the pigs, and use the product only as directed on the package.
- Immediately report all accidental needle sticks to your supervisor.

Don't:

- Place your hands between a pig and the side of the stall.
- Carry a syringe and needle in your pockets.
- Expose animal to loud noises and quick movements.
- Clutter alleyways and walking surfaces.
- Enter a small-enclosed area with an animal unless you have an escape route.
- Overcrowd pens or chutes.

Safe Animal Handling – Nursery and Finishing

The nursery in a hog operation possesses its own unique set of hazards, including moving, sorting, transporting pigs and specific precautions to avoid injury to yourself or the animals.

Moving, sorting and transporting hogs

Working with nursery pigs will require you to sort and move pigs from pen to pen. Lifting the larger pigs in the nursery and moving them from pen to pen exposes you to the risk of back injury. To prevent such an injury from occurring, be sure to follow safe lifting procedures.

Lifting pigs can be a very difficult task as they can sometimes weigh just as much, if not more, than you. When lifting pigs there are specific guidelines you should follow. For pigs weighing less than 40 pounds do the following:

1. position yourself along side and to the rear of the pig you are going to be lifting;
2. secure your grip on the outside hind leg (opposite to where you are standing) with the hand you are using to lift and use your other hand to hold the other hind leg if the pig is heavy;
3. as you lift, use the front legs of the pig to help support some of the weight until the pig is in a vertical position; and
4. lift the pig straight up to clear any gates. Lift with your legs and arms and <u>not</u> with your back.

When leaving the finisher, market hogs will weigh an average of 260 pounds. Loading and unloading such heavy animals can result in human and animal injury if correct technique is not used. The pig will most likely weigh more than you, and possesses great strength and agility, so it's a very bad idea to challenge a pig when it is trying to get past you. If an animal attempts to get past you, do not try to move or stop it with your knees.

While moving pigs can be difficult, using a sorting board to direct the pigs makes it easier. Be aware of the location of your co-workers so you do not direct the pigs toward them. Instead work together to move the animals.

There are several different types of sorting devices (see the Pork Quality Assurance manual for a description of sorting devices). When using a sorting board, keep it in front and away from your body, especially your knees. To anchor the panels use the ground or floor, not your knees.

Loading and unloading trucks is a stressful time for animals and humans. Remain calm and only load small, manageable groups. Resist the urge to move too many pigs at one time. Use sorting panels properly to help ensure safe and effective animal handling. The more stress the pig goes through, the harder it will be to handle, and the higher the risk of injury to you.

Key points

- Know the characteristics of animal vision and hearing.
- Know safe livestock handling practices for the different stages of pork production.

Do:

- Know characteristics of animal vision and hearing.
- Maintain housekeeping.
- Touch animals gently.
- Avoid the kicking region when approaching an animal.
- Maintain even lighting.

Don't:

- Expose animal to loud noises and quick movements.
- Clutter alleyways and walking surfaces.
- Enter a small-enclosed area with an animal unless you have an escape route.
- Overcrowd pens or chutes.

Women's Health Issues

Most hog facilities today use drugs or chemicals that may have a potential impact on human health, particularly women. This section will address of the chemical and drug interactions that are most dangerous to employees of both genders, and how to avoid coming into contact with these chemicals and animal health drugs.

Vocabulary

MSDS (as defined in the Right to Know Law) stands for the Material Safety Data Sheet which is required to be provided by the manufacturer with every chemical. The MSDS gives information about the chemical, its potential hazards and how to safely work with it.

Farrowing is the normal delivery of one or more live, stillborn or mummified (dried up and shriveled) pigs on or around the 114th day of pregnancy.

Reproductive hormones

Although you may not be familiar with the trade names of reproductive hormones used in swine production, chances are they are used in your facility. Examples of brand names of reproductive hormones are: matrix, Prostamate®, Estrumate®, PG600, Lutalyse® and oxytocin. Though they are drugs made by different companies, they all contain hormones that act on the reproductive system and some may have harmful effects to humans exposed to them.

Most reproductive hormones used in swine are injected. Prostaglandins such as Estrumate, Prostamate and Lutalyse are injected to induce farrowing in sows that are close to their farrowing date. Oxytocin may be injected to a sow while she is farrowing to help increase the strength of her uterine contractions to aid her in delivery. PG600 is used to induce heat in non-cycling gilts or sows after weaning.

If altrenogest, such as matrix, is used in your facility it will be applied as a liquid to sows' feed. By administering this drug to a group of sows you are able to synchronize the group so they come into heat, breed and farrow during a short time frame.

Although contact with these chemicals – from an accidental needle stick or absorption through the skin – can be dangerous to any employee, it is a greater concern for female workers. The reproductive hormones may disrupt women's menstrual cycles, cause reproductive issues or even disrupt the normal course of a pregnancy.

Let's look at each of the reproductive hormones to determine the hazards each can have on pregnant women.

Prostaglandins such as Lutalyse, Prostamate and Estrumate can lead to the abortion of a sow's pregnancy if there is an accidental exposure, while the drug matrix can actually prolong pregnancy if absorbed. If you look at the MSDS label for PG600 and Oxtocin you won't see any specific warnings directed toward women, but since they are both reproductive hormones they should be used with caution. For these reasons, if a woman working in the facility does not feel comfortable handling these drugs, she is not obligated to perform this specific task.

Gloves

Always wear impermeable gloves when working with these drugs to protect your skin from contact. If the drug accidentally comes into contact with your skin, immediately wash the affected area with soap and water.

MSDS

Your employer should always direct you to the MSDS sheet for the specific reproductive hormones used in your facility. This will inform you of any other risks or treatments associated with that drug. If you have questions about your safety after reading the MSDS for any compound used in your facility, you should consult with a physician to assess any specific health risks that you may have.

To ensure you understand the safety concerns related to compounds used in your facility and that you are confident in your ability to work with them, your employer will have you sign a Hazardous Chemical Disclosure Form. This form will be specific to the chemicals used in the facility. Women who do not feel comfortable working with hormones do not have to sign the form nor are they obligated to perform the specific task.

Some of the reproductive hormones containing drugs used in a hog facility are dangerous to all employees. If employees suffer from medical conditions listed on the MSDS, they may be exempted from performing tasks involving that drug. For example, the MSDS sheet for Lutalyse and Prostamate warns employees with asthma and bronchial and other respiratory problems to be cautious since direct exposure can cause bronchiospasms. These medical conditions are unique and different for each of the reproductive hormones so be sure to review the MSDS sheet for the specific drugs used in your facility.

In addition to the reproductive hormones, there may be other products used in facilities that could potentially have a medical impact. One such example is a group of drugs called corticosteroids (examples include Dexamethasone and Predef 2x). They are known to disrupt pregnancy in animals.

Key points

- Learn what drugs used in the pork facility can cause reproductive problems in employees if they come into contact with them.
- Understand what the hazards are for employees if they come into contact with these drugs.
- Familiarize yourself with the process of using the Hazardous Chemical Disclosure form concerning the reproductive hormone used in your facility.

Do:

- Learn what drugs used in pork production can cause reproductive problems through accidental contact before signing a Hazardous Chemical Disclosure Form.
- Read MSDS for drugs being handled.
- Understand that reproductive hormones contain drugs dangerous to all employees.

Don't:

- Work with drugs that may cause you respiratory problems.
- Work with reproductive hormones without wearing impermeable gloves.
- Needlessly expose yourself or female employees to reproductive hormones.

Power Washing and Tractor Safety

Working in a hog facility will require you to work with various pieces of equipment that can be very dangerous if you are not aware of how to use them safely. This lesson will focus on how to use and what precautions to take with powerwashing, tractors, and other equipment.

Vocabulary

Carbon monoxide is a colorless, odorless, highly toxic gas that can build up quickly in poorly ventilated structures and result in death.

A *power washer* or *pressure washer* generates tremendous force and is used to clean large areas, such as hog barns.

Repetitive motion injury is human injury that results from repeating the same physical motion over and over for an extended period of time.

Equipment and tools must only be used by authorized personnel who have been properly trained to operate it.

Training must cover:

- Operation, including adjusting and servicing
- Potential hazards
- How to deal with injuries or accidents
- Description of safeguards and required PPE
- Need for lockout/tagout, if any
- Procedure for reporting problems including missing or damaged guards

Managers/supervisors are responsible for the oversight of machinery and tool usage including ensuring that employees understand the operation, components and mechanical motions of the equipment. They are responsible for ensuring functional guards are in place to protect the operator and others in the area from:

- The machinery and its moving parts
- Flying chips or sparks
- Nip or pinch points
- Blades
- Other hazards

Areas to be guarded include:

- The actual point of operation
- Power transmission components such as belts, gears, drivelines, etc...
- Other moving parts

Machinery designed for fixed operation should be securely anchored.

Power washing hazards

Power washing enables you to clean a barn much faster and better than doing it by hand. It's a critical tool for hog operations, but can be very dangerous if you do not know how to do it correctly. When power washing, you're spraying cold or very hot water under thousands of pounds of pressure. It only takes a split second for water under that much pressure to penetrate your skin and result in serious injury.

To prevent injury from happening to you or others while power washing follow these safety guidelines:

- protect your body by wearing correct PPE;
- wear safety goggles to protect your eyes, earplugs or earmuffs to protect against hearing loss, and gloves to protect your hands;
- never aim the gun at another person, an animal or an electrical device;
- never rig the trigger to remain in the "ON" position; and
- use only your hands to depress the trigger (offset hand fatigue by switching hands and taking frequent breaks).

Gasoline-powered power washers can produce another hazard causing death by carbon monoxide poisoning. You may not be aware that small gasoline-powered engines produce high levels of carbon monoxide.

Carbon monoxide

To prevent carbon monoxide build up, place the motor outside the building you are working in. Run the hose inside and be sure the unit is away from any air intakes so the engine exhaust isn't drawn indoors by ventilation fans. If the hose isn't long enough or if you have other questions about power washing, contact your supervisor.

Tractors

Tractors are constantly used to complete work around the farm. Before attempting to operate one, you must have authorization and have been properly trained.

Key points

- Wear proper PPE for your eyes, ears, and hands when power washing.
- Never aim a power washer wand at a person or animal.
- ever rig the power washer trigger to remain in the "ON" position; use only your hands to depress the trigger.
- To drive a tractor you must be properly trained.

Do:

- Wear proper PPE for your eyes, ears, and hands when power washing.
- Place gasoline-powered pressure washing units outside the building.
- Get properly trained on how to drive tractors.

Don't:

- Aim a power washer wand at a person, animal or electrical sources.
- Rig the power washer trigger to remain in the "ON" position.
- Treat driving a tractor like driving a car.

Notes:

Notes:

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#03017 8/06